Restoring the Kootenai: A Tribal Approach to Restoration of a Large River in Idaho

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Future of our Salmon Conference – Technical Session August 2016
Healthy Floodplains, Living Rivers
Kootenai River Subbasin

- 9 million acres
- 485 miles long
- Ktunaxa Nation
- 2 Countries
- 2 States, 1 Province
- Endangered Species
- Hydropower
- Resource based economy
Kootenai River watershed

Prior to European settlement the Kootenai River watershed, with its riparian forest and wetland complexes, was one of the most productive in the Pacific Northwest.
The Kootenai Tribe
“The Kutenai were a Tribe untouched by the baneful influence of the aggressive civilization of the West. They had no reservation....they received no assistance from the Government...they lived entirely upon the products of their rivers, lakes, and forests...
Cottonwood Galleries

Early 1900’s - 60,000 to 100,000 board feet processed daily
Examples of Limiting Factors

- Altered flow and thermal regime
- Altered sediment transport, deposition, scour
- Nutrients trapped
- Loss of side channel, wetlands, and floodplains & connectivity
- River response to altered hydraulics (morphology, depth, velocity)
- Elimination modification of critical fish & wildlife habitats
- Bank erosion & land loss
Decline of native species

- Kootenai River White Sturgeon
  - ENDANGERED
- Interior Redband Trout
  - SENSITIVE
- West Slope Cutthroat
  - PETITIONED
- Burbot
  - PETITIONED
- Bull Trout
  - THREATENED
- South Arm Kokanee
  - FUNCTIONALLY EXTINCT
KOOTENAI NATION!

DECLARATION OF WAR

KNOW ALL YE THAT ON THE 6TH SEPTEMBER, 1879, THAT A STATE OF WAR EXISTED BETWEEN THE KOOTENAI NATION AND THE UNITED STATES OF AMERICA.

Justice Balch's Library

ONE DOLLAR FRANKLIN

ENTERING KOOTENAI NATION Toll 10c

Reprinted from the Spokane Chronicle

IDAHO'S FORGOTTEN WAR

A LOST TALE OF COURAGE

DIRECTED BY RONALD ROBERTS
Kootenai Tribal elders pass down the history of the beginning of time, which tells that the Kootenai people were created by Quilxka Nupika, the supreme being, and placed on earth to keep the Creator-Spirit’s Covenant – to guard and keep the land forever.

The Kootenais have never lost sight of their original purpose as guardians of the land.
The approach: the Tribe’s view

- Holistic
- Science-based
- Consistent With Tribal cultural values
- Collaborative
- Adaptively managed
- Inclusive of social and economic values
Kootenai River
White Sturgeon

- Separated from Columbia River population 10,000 years ago
- Vital to the Ktunaxa
- Adapted to specific local headwater conditions
- Virtually no natural recruitment for last 50 years
- Listed as Endangered in 1994
Kootenai River Burbot

- Freshwater Cod
- Circumpolar in distribution
- Spawn in winter under ice in spawning balls
- Severe population decline
- <50 fish estimated in Lower Kootenai by late 1990’s
- Community based conservation strategy developed in 2005

Photo by Ernest Keeley
The approach: Tribal initiatives

**HISTORICAL ECOSYSTEM CHANGES**
- Beaver trapping
- Conversion of floodplain
- Diking
- Logging
- Mining
- Infrastructure development
- Non-native species
- Commercial harvest
- Libby Dam

**TRIBAL RESTORATION INITIATIVES**
- *Kootenai River habitat restoration program*
- Sturgeon and Burbot conservation aquaculture
- Nutrient restoration & biomonitoring
- Wetlands & riparian conservation strategy
- Critical uncertainties research
- Operational loss assessment
- Wildlife mitigation
OUR OPPORTUNITY

- Big river
- Uncertainty
- Complexity
- Multiple stakeholders
- Private land ownership
- Biological Opinion
- Ecosystem objectives
1. Overarching framework for large-scale restoration

2. Focus on dynamic river processes & ecosystem functions instead of prescriptive approach to single life stage of one species restoration actions

3. Synthesis of available data & analysis

4. Goals to address limiting factors related to:
   – Morphology
   – Riparian Vegetation
   – Aquatic Habitat
   – River Management & stewardship

5. Toolbox of restoration treatments to address limiting factors
Oversight, review & coordination

From concept to construction

Tribal Council Oversight

Design Team

Policy Team

Project Management Team

Co-Manager & Agency Review Team

Adaptive Management Team

Modeling Subcommittee

Landowners

Community

Elected Officials

Stakeholders

Project Implementation

Peer Reviewer Advisory Team (Multi-disciplinary)
2011 to 2016 KRHRP Projects

- Straight Reach 2016
- Bonners Ferry Islands 2015 - 2016
- North Side Channels 2012
- Upper Meander 2012
- 1A Extension 2013
- Substrate Pilot Project 2014 (In Meander Reach downstream at Myrtle and Shorty’s Island)
- Middle Meander 2013
- Phase 1B 2011
- Phase 1A 2011
Primary Biological Objectives

• Increase the number of *large deep pools* to aid/encourage sturgeon to migrate upstream to higher quality spawning habitat

• Increase the area of *vegetated floodplain surfaces* that provide food web support

• Add *rocky substrate* to support Kootenai sturgeon egg attachment & early life stage survival (Straight Reach)

• Many additional biological benefits to other species including burbot & salmonids
Major Types of Treatments Implemented 2011-2016

1. Pool forming structures & pool creation or enhancement

2. In river & bank structures

3. Side channel reconnection, floodplain and island creation/enhancement

4. Riparian enhancement

5. Spawning substrate
2011 Phase 1a Project Site
1A in 2012 at moderate flow

1A in 2012 at high flow
A sturgeon “pool ladder”

Development of a “pool ladder” to encourage upstream sturgeon migration (and habitat for other native species)
Upper Meander actions:
• Enhance existing pools
• Contribute to pool ladder
• Add habitat diversity, complexity & LWD
• Establish a riparian buffer
Habitat Type | Habitat Description
--- | ---
Juvenile salmonid rearing | Depth < 1 ft & Velocity < 1 fps
Adult salmonid holding | Depth > 3 ft & Velocity < 1 fps
Hydraulic complexity | △V from <1 fps to > 3 fps in < 20 ft
Sturgeon spawning | Depth > 16.5 ft & Velocity > 3.3 fps
Upper Meander pile structure

Flow
2012 Project
North Side Channels
pre-project conditions
2012 Project
North Side Channel during construction
2013 Project
Middle Meander pre-project condition
Middle Meander - Construction
Kootenai River Habitat Restoration Program

• Addresses Tribal restoration objectives
  – Restore lost subsistence resources
  – Treaty and Trust obligations of Federal government

• Addresses Action Agency requirements for operation of Libby Dam & USFWS Kootenai Sturgeon Recovery Plan objectives (Endangered Species Act)

• Community based Kootenai Valley Resource Initiatives i.e., Burbot Conservation Strategy and Wetland & Riparian Conservation Strategy

• Consistent with NPCC Fish & Wildlife Program (Northwest Power Act) & Kootenai Subbasin Plan
The Kootenai Tribe acknowledges and thanks all the partners and friends that have been a part of making the restoration efforts a success!